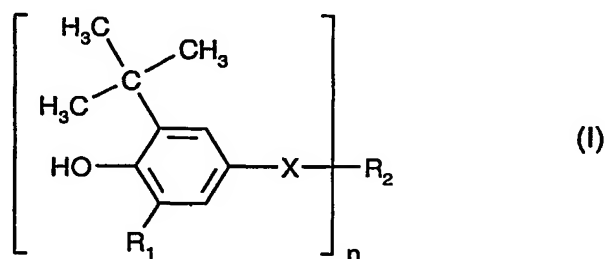


What is claimed is:

1. A nanocomposite material comprising
 - a) a synthetic polymer,
 - b) a natural or synthetic phyllosilicate or a mixture of such phyllosilicates in nanoparticles,
 - c) a phenolic antioxidant and/or a processing stabilizer, and
 - d) a mono or polyfunctional compound selected from the class consisting of the epoxides, oxazolines, oxazolones, oxazines, isocyanates and/or anhydrides.
2. A nanocomposite material according to claim 1, wherein component (a) is a polyolefin.
3. A nanocomposite material according to claim 1, wherein component (b) is a layered silicate clay in nanoparticles.
4. A nanocomposite material according to claim 1, wherein component (b) is a montmorillonite, bentonite, beidelite, mica, hectorite, saponite, nontronite, sauconite, vermiculite, ledikite, magadite, kenyaite, stevensite, volkonskoite or a mixture thereof in nanoparticles.
5. A nanocomposite material according to claim 1, wherein component (b) is modified by an ammonium or phosphonium compound.
6. A nanocomposite material according to claim 1, wherein the phenolic antioxidant as component (c) is a compound of the formula I



in which

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R_1 is C_1 - C_4 alkyl,

n is 1, 2, 3 or 4,

X is methylene, $-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{Y}-$ or $-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{CH}_2-\text{CH}_2-$,

Y is hydrogen or $-\text{NH}-$; and,

if n is 1,

X is $-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{Y}-$, where Y is attached to R_2 , and

R_2 is C_1 - C_{25} alkyl; and,

if n is 2,

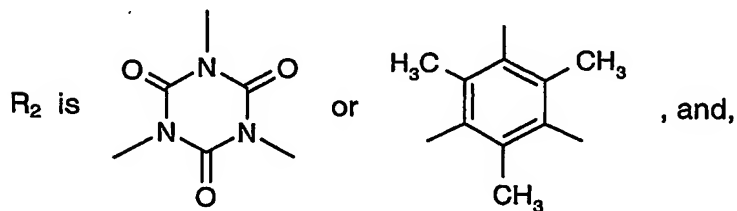
X is $-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{Y}-$, where Y is attached to R_2 , and

R_2 is C_2 - C_{12} alkylene, C_4 - C_{12} alkylene interrupted by oxygen or sulfur; or, if Y is $-\text{NH}-$, R_2 is additionally a direct bond; and,

if n is 3,

X is methylene or $-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{O}-\text{CH}_2-\text{CH}_2-$, where the ethylene group is attached to

R_2 , and



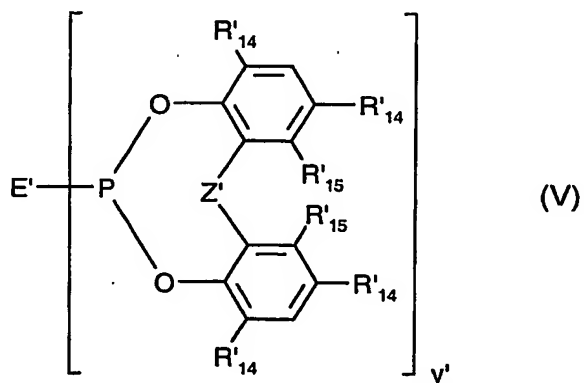
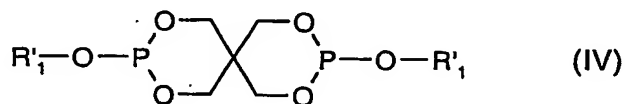
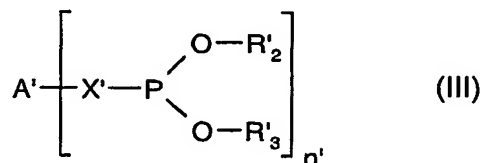
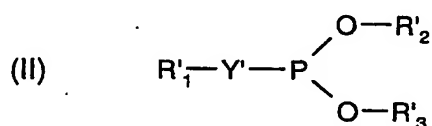
if n is 4,

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X is $\text{—CH}_2\text{—CH}_2\text{—C(=O)—Y—}$, where Y is attached to R₂, and

R₂ is C₄–C₁₀alkanetetrayl.

7. A nanocomposite material according to claim 1, wherein the processing stabilizer as component (c) is a compound of the formula II, III, IV or V



in which

n' is the number 2 and y' is the number 1, 2 or 3;

A' is C₂–C₁₈alkylene, p-phenylene or p-biphenylene,

E', if y' is 1, is C₁–C₁₈alkyl, -OR'₁ or fluorine;

E', if y' is 2, is p-biphenylene,

E', if y' is 3, is N(CH₂CH₂O-)₃,

R'₁, R'₂ and R'₃ independently of one another are C₁–C₁₈alkyl, C₇–C₉phenylalkyl, cyclohexyl, phenyl, or phenyl substituted by 1 to 3 alkyl radicals having in total 1 to 18 carbon atoms;

R'_{14} is hydrogen or C_1 - C_9 alkyl,

R'_{15} is hydrogen or methyl;

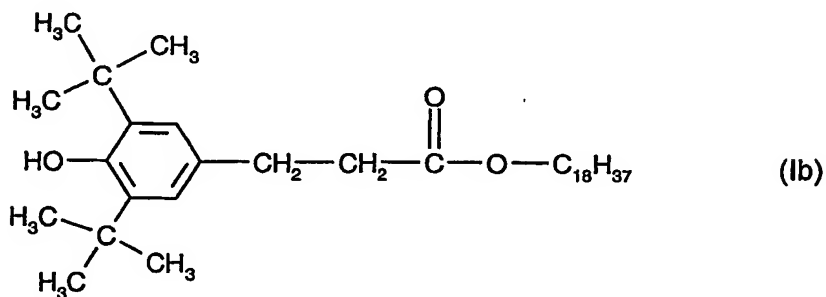
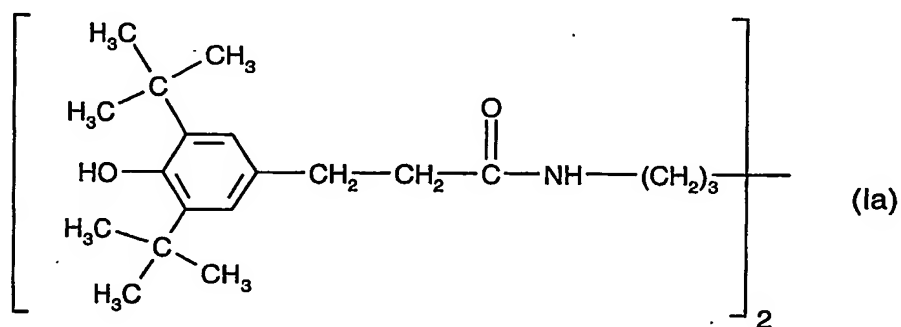
X' is a direct bond,

Y' is oxygen,

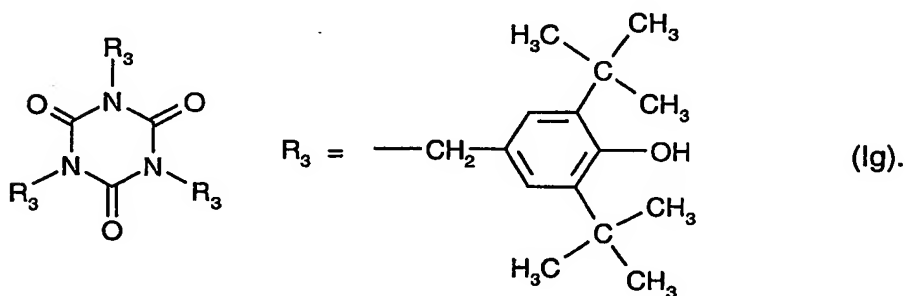
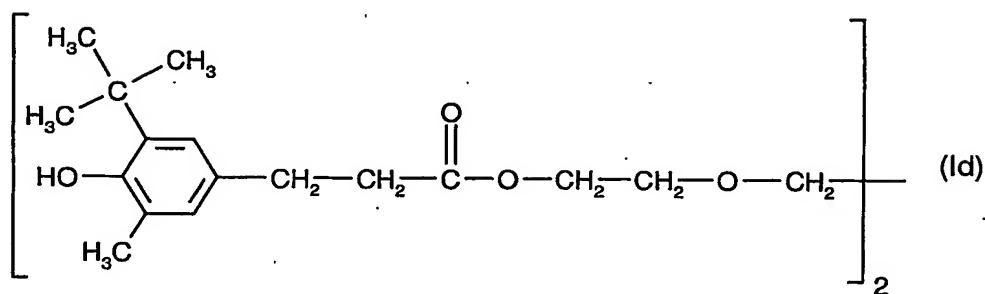
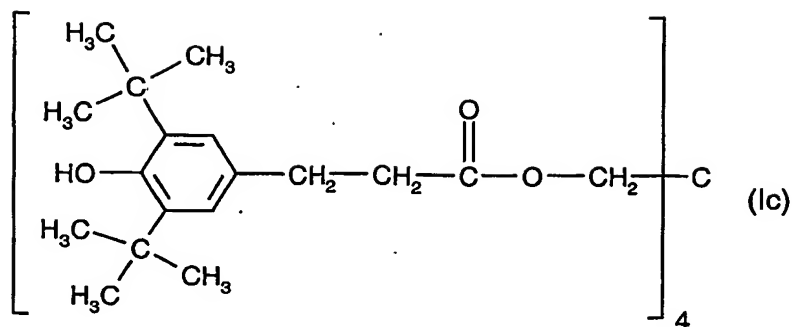
Z' is a direct bond or $-CH(R'_{16})-$, and

R'_{16} is C_1 - C_4 alkyl; or a benzofuran-2-one.

8. A nanocomposite material according to claim 1, wherein component (c) is tris(2,4-di-tert-butylphenyl) phosphite, bis(2,4-di-tert-butyl-6-methylphenyl) ethyl phosphite, bis(2,4-di-tert-butylphenyl) pentaerythritol diphosphite, tetrakis(2,4-di-tert-butylphenyl) 4,4'-biphenylenediphosphonite, 3-(3,4-dimethylphenyl)-5,7-di-tert-butylbenzofuran-2-one, 3-(2,3-dimethylphenyl)-5,7-di-tert-butylbenzofuran-2-one, and/or a compound of the formula Ia, Ib, Ic, Id or Ig

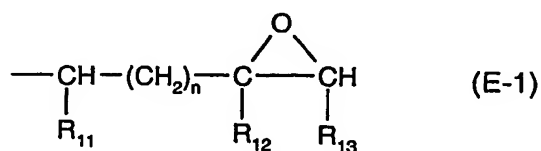


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9. A nanocomposite material according to claim 1, wherein component (d) is an epoxide.

10. A nanocomposite material according to claim 1, wherein component (d) is a polyfunctional epoxide which comprises epoxide radicals of the formula E-1



which are attached directly to carbon, oxygen, nitrogen or sulfur atoms, and wherein R_{11} and R_{13} are both hydrogen, R_{12} is hydrogen or methyl and n is 0; or wherein R_{11} and R_{13} together are $-\text{CH}_2\text{CH}_2-$ or $-\text{CH}_2\text{CH}_2\text{CH}_2-$, R_{12} is then hydrogen, and n is 0 or 1.

11. A nanocomposite material according to claim 1, wherein component (d) is bisphenol A diglycidyl ether, bisphenol F diglycidyl ether, diglycidyl 1,2-cyclohexanedicarboxylate or phenol novolak epoxy resin.
12. A nanocomposite material according to claim 1, wherein component (b) is present in an amount of from 0.01 to 30 %, based on the weight of component (a).
13. A nanocomposite material according to claim 1, wherein component (c) is present in an amount of from 0.01 to 5 %, based on the weight of component (a).
14. A nanocomposite material according to claim 1, wherein component (d) is present in an amount of from 0.01 to 5 %, based on the weight of component (a).
15. A nanocomposite material according to claim 1, comprising in addition, besides components (a), (b), (c) and (d), further additives.
16. A nanocomposite material according to claim 15, comprising as further additives modification agents for nanocomposites, compatibilizers, light-stabilizers, dispersing or solvating agents, pigments, dyes, plasticizers and/or toughening agents.
17. A nanocomposite material according to claim 15, comprising as further additives modification agents for nanocomposites, compatibilizers and/or metal passivators.
18. A nanocomposite material according to claim 1 in the form of a masterbatch comprising component (b) in an amount of from 0.03 to 90 %, based on the weight of component (a), component (c) in an amount of from 0.03 to 15 %, based on the weight of component (a), and component (d) in amount of from 0.03 to 15 %, based on the weight of component (a).

19. A process for stabilizing a synthetic polymer against oxidative, thermal or light-induced degradation, which comprises incorporating in or applying to said material at least one each of components (b), (c) and (d) according to claim 1.
20. The use of a mixture of components (b), (c) and (d) according to claim 1 as stabilizers for synthetic polymers against oxidative, thermal or light-induced degradation.